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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/409,338	09/30/1999	MAKOTO YAMADA	030662-047	5232

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EXAMINER
SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
1734	

DATE MAILED: 08/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/409,338	YAMADA ET AL.	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,9,10,13 and 14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,9,10,13 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicants' amendment filed 7/29/03 overcomes all outstanding rejections of record.

In light of the use of a new reference against the present claims, namely, JP 06184480, the finality of the previous office action has been withdrawn and the following action is non-final.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

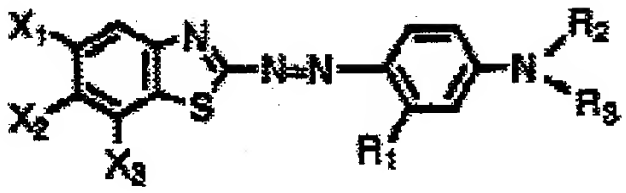
the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 5, 9-10, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nigam et al. (U.S. 5,973,025) in view of Bates et al. (U.S. 5,958,999), Schwarz (U.S. 5,665,150), and JP 06184480.

Nigam et al. discloses an ink jet ink having a viscosity of 1.5-15 cP wherein the ink comprises aqueous medium, 0.1-20% dye which is dissolved in aqueous medium, glycerol, and basic polymer corresponding to presently claimed formula I wherein L is a single bond, -CO-, arylene, or alkylene and Am is 1-imidazolyl. It is disclosed that the polymer has a molecular weight of preferably 300-100,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.4, lines 11-13, col.5, lines 45-46, col.8, lines 52-53, col.9, lines 46-50, col.10, lines 17-18 and 42-46, col.11, lines 34 and 59-61, col.12, lines 41-42 and 48-49, col.13, lines 40-45, col.18, lines 42-43, col.20, lines 6-15, col.32, lines 25, and col.33, lines 15-17).

The difference between Nigam et al. and the present claimed invention is the requirement in the claims of (a) specific type of dye and (b) the amounts of glycerol and basic polymer present in the ink.

With respect to difference (a), pending translation, it is noted that JP 06184480, which is drawn to ink jet ink, discloses the use of dye of the formula:



which is identical to the dye of presently claimed formula (V) when R^{10} is unsaturated hetereocyclic ring, R^9, R^8, and R^6 are each hydrogen, R^7 is hydrogen, chloride, or alkyl group, and R^4 and R^5 are each alkyl group. The motivation for using such dye is to produce ink stable in long-term disperability, excellent in printability, and which provides bright printed material.

With respect to difference (b), there is no disclosure in Nigam et al. of the amounts of glycerol and basic polymer present in the ink with the exception of the disclosure of amounts as set forth in the examples.

On the one hand, it is noted that Example 44 discloses ink comprising dye, glycerol, and as calculated, approximately 2% basic polymer. However, the basic polymer utilized in this example is not the basic polymer presently claimed, i.e. having a side-chain containing 1-imidazolyl, but rather a poly(vinylpyridine). However, it would have been obvious to one of ordinary skill in the art given the disclosure of the equivalence and interchangeability of the basic polymers disclosed by Nigam et al., that any of the basic polymers including those having a side-chain containing 1-imidazolyl, would be suitable for use with glycerol and would also be utilized at 2% as set forth in the example, and thus, one of ordinary skill in the art would have arrived at the claimed invention.

On the other hand, Bates et al., which is drawn to ink jet inks, discloses the use of 0.1-10% basic polymer containing nitrogen-containing heterocyclic groups having a side-chain containing 1-imidazolyl in order to produce ink with good waterfastness and stability (col.26-

34) while Schwarz (U.S. 5,665,150) disclose that aqueous ink jet inks typically comprise 5-50% humectant such as glycerol (col.13, lines 32-34, 37, and 47-52).

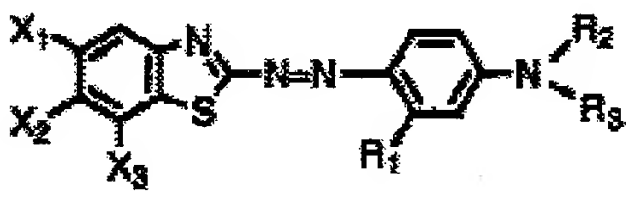
In light of the motivation for using specific dye disclosed by JP 06184480 as described above and for using specific amount of polymer disclosed by Bates et al. and specific amount of glycerol disclosed by Schwarz as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye and this amount of polymer and glycerol in the ink if Nigam et al. in order to produce an ink with good waterfastness and stability that will not dry out and clog the printer nozzles and that produces ink stable in long-term disperability, excellent in printability, and which provides bright printed material, and thereby arrive at the claimed invention.

5. Claims 1, 5, 9-10, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates et al. (U.S. 5,958,999) in view of Nigam et al. (U.S. 5,973,025), Schwarz (U.S. 5,665,150), and JP 06184480.

Bates et al. disclose an ink jet ink containing 1-10% dye soluble in the ink composition, aqueous medium, glycerol, and 0.1-10% basic polymer which corresponds to presently claimed formula I wherein L is a single bond and Am is a nitrogen atom-containing heterocyclic group including vinylimidazole. It is disclosed that the polymer has a molecular weight of less than 50,000. There is also disclosed a method for forming an ink image onto a substrate using an ink jet printer to print the above ink (col.3, lines 15-35, col.4, lines 11-15, col.5, lines 48-50 and 54-55, col.7, lines 16-17, 36, and 48-57, col.9, line 65, col.10, lines 20 and 30, and example 11).

The difference between Bates et al. and the present claimed invention is the requirement in the claims of (a) specific type of dye, (b) amount of glycerol, and (c) the viscosity of the ink.

With respect to difference (a), pending translation, it is noted that JP 06184480, which is drawn to ink jet ink, discloses the use of dye of the formula:



which is identical to the dye of presently claimed formula (V) when R^{10} is unsaturated hetereocyclic ring, R^9, R^8, and R^6 are each hydrogen, R^7 is hydrogen, chloride, or alkyl group, and R^4 and R^5 are each alkyl group. The motivation for using such dye is to produce ink stable in long-term disperability, excellent in printability, and which provides bright printed material.

In light of the motivation for using specific dye disclosed by JP 06184480, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink of Bates et al. in order to produce an ink stable in long-term disperability, excellent in printability, and which provides bright printed material, and thereby arrive at the claimed invention.

With respect to difference (b), it is noted that Bates et al. disclose the use of glycerol, but there is no explicit disclosure of the amount in which it is used.

However, on the one hand, Bates et al. disclose that the amount of additives, including humectants such as glycerol, utilized depends on the molecular weight of the polymer, nature of the polymer, viscosity of the ink, etc. (col.7, lines 36-37 and 41-46).

In light of the above and given that Bates et al. disclose ink as presently claimed including identical type of polymer, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to choose amounts of glycerol, including those presently claimed, in order to produce ink which will not dry out and clog the printer nozzles, and thereby arrive at the claimed invention.

On the other hand, Schwarz (U.S. 5,665,150) disclose that aqueous ink jet inks typically comprise 5-50% humectant such as glycerol (col.13, lines 32-34, 37, and 47-52).

In light of the motivation for using specific amount of glycerol disclosed by Schwarz as described above, it therefore would have been obvious to one of ordinary skill in the art to use this amount of glycerol in the ink if Bates et al. in order to produce an ink that will not dry out and clog the printer nozzles, and thereby arrive at the claimed invention

With respect to difference (c), Bates et al. does not explicitly disclose the viscosity of their ink jet inks. However, given that if the ink viscosity is too high, the ink clogs the printer nozzles, it would have been within the level of one of ordinary skill in the art to control the viscosity of the ink jet ink to avoid printer clogging. Evidence to support this position is found in Nigam et al. which discloses that the viscosity of an ink is adjusted depending on its desired utility, and that for ink jet inks, the viscosity is typically 1.5-15 cP (col.18, lines 38-45).

In light of the above, it would have been obvious to one of ordinary skill in the art to control the viscosity of the ink jet ink of Bates et al. to 1.5 to 15 cP in order to produce an ink that will not clog the printer nozzles, and thereby arrive at the claimed invention.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie Shosho

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
8/15/03